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Description

Master control system for a rolling mill, especially for a mill train

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The invention relates to a master control system for a rolling mill, especially a mill train, the rolling mill, especially the mill train, having at least one rolling stand driven by means of a drive system, and the master control system having an automation device for the open-loop and/or closed-loop control of the rolling stand, and also relates to a method of operating a rolling mill, especially a mill train, having a master control system of this type.

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It is customary for the commissioning of individual components of a rolling mill or a mill train to connect said components by a data link to a commissioning computer and to commission them by transferring a program code or operating parameters. After completion of this process, this operation is repeated with the next system component. System components in this sense may be, for example, drive systems or automation devices. When individual components, for example defective components, are exchanged, the new component, for example a new automation device or a new drive system, is also correspondingly commissioned.

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The object is to improve the commissioning.

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The object is achieved according to the invention by a master control system as claimed in claim 1, a rolling mill, especially a mill train, as claimed in claim 11 and a method as claimed in claim 12. For a rolling mill, especially a mill train, which has at least one rolling stand driven by means of a drive system and a master

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control system with at least one automation device for the open-loop and/or closed-loop control of the rolling stand, it is provided here that the master control system has a commissioning computer for the commissioning of the drive  
5 system and of the automation device. According to the

method as claimed by the invention, the commissioning of the drive system and of the automation device takes place by means of the commissioning computer.

- 5 In an advantageous refinement of the invention, the master control system has an operator-control computer for monitoring and/or influencing the rolling mill, especially the mill train, the commissioning computer being designed for the commissioning of the operator-control computer.

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- In an especially advantageous refinement of the invention, the master control system has at least one bus system for the transmission of operating parameters and/or program code from the commissioning computer to at least one of  
15 the components comprising the drive system, automation device and operator-control computer.

- In an especially advantageous refinement of the invention, the bus system is designed for the transmission of  
20 information necessary for the operation of the rolling mill, especially the mill train, between at least two of the components comprising the drive system, automation device and operator-control computer.

- 25 In a further advantageous refinement of the invention, the master control system has at least one first bus system for the transmission of operating parameters and/or program code from the commissioning computer to the automation device, connecting the commissioning computer  
30 and the automation device by a data link, and has at least one second bus system for the transmission of operating parameters and/or program code to the drive system, connecting the automation device and the drive system by a data link.

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In a further advantageous refinement of the invention, the second bus system is designed for the transmission of information necessary for the operation of the rolling mill, especially the mill train, between the automation  
5 device and the drive system.

In a further advantageous refinement of the invention, the master control system has an operator-control computer for monitoring and/or influencing the rolling mill, especially the mill train, the operator-control computer being  
5 connected to the first bus system by a data link, and the first bus system being designed for the transmission of information necessary for the operation of the rolling mill, especially the mill train, between the operator-control computer and the automation device.

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In a further advantageous refinement of the invention, the master control system has at least two automation devices of different types, the commissioning computer being designed for the commissioning of both automation devices.

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Further advantages and details emerge from the following description of an exemplary embodiment.

The figure shows a master control system in an exemplary  
20 configuration. Provided here is an industrial Ethernet bus 9, which connects two identically or differently designed automation devices 5 and 6, an operator-control computer and a commissioning computer to one another by a data link. The industrial Ethernet bus 9 is connected to  
25 a standard Ethernet bus 8 via a computer 7. Connected to the standard Ethernet bus 8 are an operator-control computer 2 and a central operator-control computer 3. Parts of the rolling mill or parts of the mill train can be operated via the operator-control computers 2 and 4.  
30 The interaction of individual system parts of the rolling mill or the mill train can be operated by means of the central operator-control computer 3. Various actuators or sensors 12, 13, 14, 15 are connected by a data link to the automation device 5 via a bus system 23, which is designed  
35 as a Profibus. Furthermore, decentralized peripherals 10

are connected to the automation device 6 via the bus system 23. Various actuators or sensors 16, 17, 18, 19 are connected by a data link to the automation device 6 via a bus system 24, which is

## Patent claims

1. A master control system for a rolling mill, especially a mill train, the rolling mill, especially the mill train, having at least one rolling stand driven by means of a drive system, and the master control system having an automation device for the open-loop and/or closed-loop control of the rolling stand, characterized in that the master control system has a commissioning computer for the commissioning of the drive system and of the automation device.
2. The master control system as claimed in claim 1, it having an operator-control computer for monitoring and/or influencing the rolling mill, especially the mill train, characterized in that the commissioning computer is designed for the commissioning of the operator-control computer.
3. The master control system as claimed in claim 1 or 2, characterized in that it has at least one bus system for the transmission of operating parameters and/or program code from the commissioning computer to at least one of the components comprising the drive system, automation device and operator-control computer.
4. The master control system as claimed in claim 3, characterized in that the bus system is designed for the transmission of information necessary for the operation of the rolling mill, especially the mill train, between at least two of the components comprising the drive system, automation device and operator-control computer.

5. The master control system as claimed in claim 3 or 4,  
characterized in that it has at least one first bus  
system for the transmission of operating parameters  
and/or program code from the commissioning computer to  
5 the automation device,



- connecting the commissioning computer and the automation device by a data link, and has at least one second bus system for the transmission of operating parameters and/or program code to the drive system, connecting the automation device and the drive system by a data link.
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6. The master control system as claimed in claim 5, characterized in that the second bus system is designed for the transmission of information necessary for the operation of the rolling mill, especially the mill train, between the automation device and the drive system.
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7. The master control system as claimed in claim 5 or 6, it having an operator-control computer for monitoring and/or influencing the rolling mill, especially the mill train, characterized in that the operator-control computer is connected to the first bus system by a data link, and in that the first bus system is designed for the transmission of information necessary for the operation of the rolling mill, especially the mill train, between the operator-control computer and the automation device.
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8. The master control system as claimed in one of the preceding claims, characterized in that it has at least two automation devices of different types and in that the commissioning computer is designed for the commissioning of both automation devices.
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9. A rolling mill, especially a mill train, the rolling mill, especially the mill train, having at least one rolling stand driven by means of a drive system and a master control system with an automation device for
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the open-loop and/or closed-loop control of the  
rolling stand, characterized

in that the master control system has a commissioning computer for the commissioning of the drive system and of the automation device.

- 5 10. A method of operating a rolling mill, especially a  
mill train, by means of a master control system as  
claimed in one of the preceding claims, the rolling  
mill, especially the mill train, having at least one  
rolling stand driven by means of a drive system, and  
10 the master control system having an automation device  
for the open-loop and/or closed-loop control of the  
rolling stand, characterized in that the commissioning  
of the drive system and of the automation device takes  
place by means of one and the same commissioning  
15 computer.